

## CLAIMS

What is claimed is:

- 1 1. A projection system comprising:
  - 2 a solid state light source;
  - 3 a sensor either coupled to or integrated with the solid state light source to
  - 4 monitor a region of the solid state light source for a thermal condition, and output a
  - 5 signal indicative of the thermal condition of the monitored region; and
  - 6 a controller coupled to the sensor to conditionally initiate one or more thermal
  - 7 management actions based at least in part on the thermal condition of the region as
  - 8 indicated by the signal.
- 1 2. The projection system of claim 1, wherein the solid state light source comprises a
- 2 selected one of a light emitting diode and a laser diode.
- 1 3. The projection system of claim 1, wherein the projection system further
- 2 comprises an active cooling arrangement thermally coupled to the solid state light
- 3 source, and the controller is coupled to the active cooling arrangement to control its
- 4 operations, varying an amount of cooling the active cooling arrangement imparts on the
- 5 solid state light source based at least in part on the thermal condition of the region as
- 6 indicated by the signal.
- 1 4. The projection system of claim 3, wherein the active cooling arrangement
- 2 comprises a fan, and the controller controls a speed of the fan, varying an amount of air
- 3 flow the fan drives pass the solid state light source.

1    5.    The projection system of claim 3, wherein the active cooling arrangement  
2    comprises a cooling pipe, and the controller controls a flow rate of the cooling pipe,  
3    varying an amount of fluid flow pass the solid state light source.

1    6.    The projection system of claim 3, wherein the active cooling arrangement  
2    comprises a thermoelectric cooler, and the controller controls an operation level of the  
3    thermoelectric cooler, varying an amount of heat being removed from the solid state  
4    light source.

1    7.    The projection system of claim 3, wherein the projection system further  
2    comprises drive circuitry coupled to the solid state light source to drive the solid state  
3    light source, and the controller is further coupled to the drive circuitry to influence its  
4    operation, indicating to the drive circuitry to vary an amount of drive voltage or current  
5    the drive circuitry applies to the solid state light source, based at least in part on the  
6    thermal condition indicated by the signal.

1    8.    The projection system of claim 1, wherein the projection system further  
2    comprises drive circuitry coupled to the solid state light source to drive the solid state  
3    light source, and the controller is coupled to the drive circuitry to influence its operation,  
4    indicating to the drive circuitry to vary an amount of drive voltage or current the drive  
5    circuitry applies to the solid state light source, based at least in part on the thermal  
6    condition indicated by the signal.

1    9.    The projection system of claim 1, wherein the projection system further  
2    comprises

3           a processor coupled to the light source to control the light source to project an  
4       image; and

5           an input interface coupled to the processor to facilitate input to the processor  
6       pixel data of the image.

1     10.   The projection system of claim 8, wherein the processor comprises the controller.

1     11.   The projection system of claim 8, wherein the projection system further  
2       comprises a television tuner coupled to the input interface.

1     12.   In a projection apparatus, a method of operation comprising:  
2           monitoring a region of a solid state light source of the projection apparatus for  
3       thermal condition, and outputting a signal indicative of the thermal condition of the  
4       monitored region; and

5           conditionally initiating one or more thermal management actions based at least in  
6       part on the thermal condition of the region as indicated by the signal.

1     13.   The method of claim 12, wherein said conditionally initiating of one or more  
2       thermal management actions comprises conditionally controlling an active cooling  
3       arrangement, varying an amount of cooling the active cooling arrangement imparts on  
4       the solid state light source based at least in part on the thermal condition of the region  
5       as indicated by the signal.

1     14.   The method of claim 13, wherein said conditionally controlling an active cooling  
2       arrangement comprises controlling a speed of a fan, varying an amount of air flow the  
3       fan drives pass the solid state light source.

1 15. The method of claim 13, wherein said conditionally controlling an active cooling  
2 arrangement comprises controlling an operation level of a thermoelectric cooler, varying  
3 an amount of heat being removed from the solid state light source.

1 16. The method of claim 13, wherein said conditionally controlling an active cooling  
2 arrangement comprises controlling a flow rate of a cooling pipe, varying an amount of  
3 fluid flowing pass the solid state light source.

1 17. The method of claim 13, wherein the method further comprises applying an  
2 amount of a selected one of a voltage and a current to drive the solid state light source,  
3 and said conditionally initiating of one or more thermal management actions further  
4 comprises conditionally indicating an variation to the amount of the selected one of the  
5 voltage and the current to be applied, based at least in part on the thermal condition  
6 indicated by the signal.

1 18. The method of claim 12, wherein the method further comprises applying an  
2 amount of a selected one of a voltage and a current to drive the solid state light source,  
3 and said conditionally initiating of one or more thermal management actions comprises  
4 conditionally indicating an variation to the amount of the selected one of the voltage and  
5 the current to be applied, based at least in part on the thermal condition indicated by the  
6 signal.

1 19. A projection apparatus comprising:  
2 solid state light source means for providing light;

3       means for monitor a region of the solid state light source means for a thermal  
4   condition, and output a signal indicative of the thermal condition of the monitored region;  
5   and

6       means for conditionally initiating one or more thermal management actions  
7   based at least in part on the thermal condition of the region as indicated by the signal.

1   20.   The projection apparatus of claim 19, wherein the projection apparatus further  
2   comprises active cooling means to cool the solid state light source means, and the  
3   controller means is also for controlling operation of the active cooling means, based at  
4   least in part on the thermal condition of the region as indicated by the signal.